Perception of Mechanical Engineering Technician Students and Teachers towards Methods Applied at Technical Training institutes in Kenya

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Abstract

Studies in Kenya show that teachers were more comfortable teaching theory than practical skills. The curricula in majority of Technical and Vocational education and training Institutions (TVET) is a theory based, where teachers use traditional teaching methods and that the graduates from the TVET institutions have low level of skills among other problems. The purpose of this study was to identify teaching methods used by instructors to deliver content in the departments of mechanical engineering in TVET institutions in Kenya, to establish the opinion of instructors about the teaching methods that they considered interesting, beneficial and motivating to students, to identify teaching strategies used in mechanical engineering department in TTIs in Kenya. This study adopted mixed research method, which used both quantitative and qualitative methods to give a general picture of the state of teaching methods used in Technical Training institutes in Kenya. In order to achieve the objectives, a sample comprising of 248 mechanical engineering technician students and 61 instructors was selected. Five technical training institutions were purposefully sampled and the respondents for the research were selected proportionately to the population in each institution. Self-administered questionnaires were filled by students and teachers / instructors using semi-structured questionnaires containing mainly the Likert-type rating scale observation scales. Data was analyzed descriptively using SPSS version 20 to generate frequencies, percentages, and correlation coefficients to help answer the research questions regarding different objectives. The results of the study showed that despite the availability of many teaching methods, teachers / instructors of TTIs are still using traditional approaches where the teacher's / instructors' role is directive and authoritative. The study also revealed that the instructors were aware of new constructivist methods of teaching and learning methods such as active learning, students having discussions with their teachers in order to construct their own knowledge, knowledge being a progressive process and students working in groups but the implementation of these approaches has not been well used and the teachers claiming that to use them will require a complete review of the Kenya National Education Curriculum which evaluates the learners mainly by written examinations. The study found out that no single teaching method is effective but found out that effective teaching methods are ones that will enable the instructor to attain the TVET objectives and also to complete the mechanical engineering syllabus within the time allocated by the Kenya Institute of Curriculum Development. The study recommends the adoption of student-centred teaching methods and further suggests constructivism as a method of instruction in order to give students time to develop instincts and manipulative skills.

Keywords: Instructors, teaching methods, mechanical engineering

INTRODUCTION

All over the world the teacher's role keeps on undergoing transition very quickly because of globalization, Information Communication and Technology (ICT), Technological obsolescence. The teachers' pedagogical skills must also change in such a way that the

instructor's role is to guide learners rather than controller of knowledge, the teacher ceases to be viewed as an expert in knowledge to being a co-learner, user of ICT rather than learner of ICT and the learners have to change from from passive to become active, mere reproducer of knowledge acquired to producer of knowledge, content learning to critical thinkers UNESCO (2011, pp. 4-6).

According to Chege (2016), instructors in village polytechnics and many TVET institutions use the traditional teaching methods such as lectures, discussions, case studies, programmed instructions, role playing, demonstration, experiments and educational field trips among others. He affirms that lecture method was the most commonly used method that is liked by students.

According to Berk (2007), a unified conceptualization of effective teaching uses multiple sources of evidence, such as student ratings, peer ratings, and self-evaluation, to provide an accurate and reliable base for formative and summative decisions. Svinicki (2010), argued that most instructors narrate problem solving instead of engaging learners in hands-on practical sessions. He adds on that in most cases instructors do not give students adequate time to synthesize what they are learning or create a mental model while assuming that the learners will figure out what they have learnt on their own.

According to Lubis (2010), vocational education is education for work. A Universitas Pendidikan Indonesia (UPI) International Conference on Technical and Vocational Education which took place in Indonesia revealed that instructional strategies used should be directed towards the skills and competencies needed in the work place. It was said that students should learn the knowledge, skills, attitudes, and values which are important in doing a certain job in such a way as they apply them in the real work setting. Similarly, Isma (2010) also argued that for learners to learn properly, they require learning materials which match student needs; the curriculum should be student-centred as well as related to the industry demands.

According to Quanquan (2006), vocational education in Germany more emphasis on action rather than the abstract derivation of formulas and theory examinations. That's why Germany produces high quality workers. Teaching takes place in real working environments, where the learners acquire special skills and good production practices. The teaching occurs in small classes. There is also application of multimedia instruction in teaching.

In the study of the role of play as an effective teaching method, Graves (2008), asserted that traditional teaching methods such as lecture do not help students make connections or feel empathy towards the material to the same extent role-play does, though it is necessary at times. However, Carpenter (2006) argued that in some teaching situations, there is no other more effective way of delivery other than the lecture method. In their presentation at the Triennale meeting in Ouagadougou, Burkina Faso, Ferej, Kitainge, & Ooko (2012), revealed that two thirds of teachers of TVET institutions felt more comfortable teaching theory than practical. This was seen as a reflection of an inadequate industrial work experience. Ngerechi (2003), stipulates that time allocated for manipulative and analytical skills training should be 60% and 40%, respectively.

The choice of methods of teaching is a big challenge among teachers and instructors of TTIs in Kenya. According to Aring & DePietro-Jurand (2012), the underlying and hidden issue about (TVET) is the perception of the term "vocational" in different languages and cultures.

The countries of Northern Europe perceive the term vocational training with a negative connotation. Kenya is a former British colony and the same perception still affects her.
A study by Nyerere (2009), in Kenya revealed that the quality of TVET graduates has declined in recent years due to; poor instructional methods, inadequate practical skills, out-dated training equipment and lack of meaningful work experience and supervision during attachment. The graduates of TVET experience technology shock when they finally enter the job market.

According to Tarno & Omondi (2013), 86% of instructors in TVET institutions are recruited directly after they graduate from universities and colleges based on their academic qualifications, and lack necessary industrial skills to impart to their students. Additionally Ngure (2013), noted that qualified personnel with work experience were not willing to become teachers due to low salary. The study by Ngure (2013) on small and medium enterprises (SMEs) in the motor-vehicle service and repair industry concluded that skills and knowledge acquired from TVET institutions should be applicable to the workplace and meet the needs of the industry. She further observed that employers invest 6-12 months of training personnel recruited from TVET institutions because their skills' levels were too low. The extra training is a wasteful practice in terms of time, finances and personal growth. According to the Government of Kenya's (Ministry of Education and Ministry of Higher Education, 2012), curriculum in majority of TVET institutions is theory-based as opposed to the desired combination of theory and competency-based courses. Embracing new methods of teaching in mechanical engineering in TTIs is fundamental for effective knowledge transfer. Many trainers use a variety of teaching strategies but their effectiveness depends on which method helps to achieve the objectives of the learner and the trainer. Therefore, this research will identify appropriate methods that would be used to improve knowledge transfer to diploma level mechanical engineering students in Kenya.

Theoretical Framework

This study was anchored on constructivists' theories of learning by John Dewey (1859-1952), Bruner (1915-2016) and Piaget (1896-1980). John Dewey was opposed to the fact that schools should focus on repetitive, rote memorization and proposed a method called "directed living" where students engage in real-world, practical workshops and collaborations which allow the learners to demonstrate their knowledge through creativity. John Dewey proposed that students should be given opportunity to think and articulate their thoughts since education must be based on real experience. Piaget on the other hand proposed that learning is a dynamic process which incorporates successive stages of adaption to reality. Piaget believed that learners should be actively engaged in order to construct knowledge by creating and testing their own theories of the world. According to Bruner, learners are more likely to retain knowledge attained by engaging real-world and contextualized problem-solving than by traditional transmission methods.

According to the three great constructivists main activity in the classroom involve solving problems. The students should use the inquiry method to ask questions, investigate a topic by using a variety of resources to find solutions and answers. The teacher and the students think of knowledge as being dynamic (ever changing with our experiences and students work primarily in groups) and therefore the teacher's role should be interactive and rooted in negotiation assessment including student works, observations, and points of view, as well as tests.

The constructivist theories of learning are also incorporated in the ideas of Svinicki (2008) who proposed four main areas of focus for instructors in order to maximize learning (Figure

1). Svinicki (2008), explains the kind of data to collect, the type of question to ask and the variables the researcher should consider. Using the guidebook saves time and effort of the researcher who focuses only on key research design components to investigate. Thus, interpretation of data and decisions are guided by the How People Learn (HPL) model explained by Svinicki (2008). When related to engineering field, the HPL model involves four key areas. (Figure 1).

1. Student-centered – driven by the knowledge, skills, attitudes and needs of the learner,
2. Knowledge- or content-centered – focused on helping learners develop a deep understanding of the content and processes of the discipline,

3. Assessment-centered - keyed to both formative and summative evaluation with frequent and informative feedback and revision and
4. Community-centered - based in a community of learners within the learning situation and connected to the community at large.

In this study, the development of questionnaires was tailored towards the HPL model of learning.

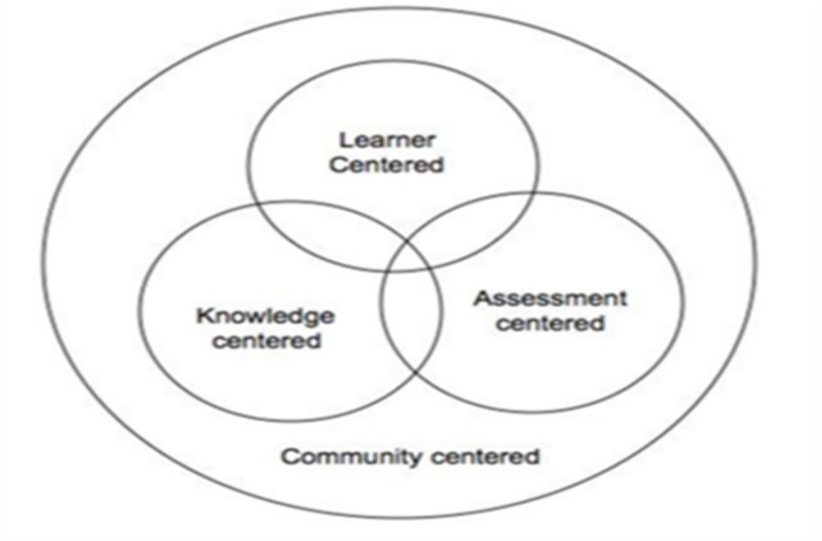

Figure 1: How People Learn Model.
Source: Svinicki (2008)

METHODOLOGY

This study adopted a mixed research method which involves the use of both quantitative and qualitative methods of collecting data. This research focused on specific narration of facts and characteristics concerning individual students and instructors.

The study was conducted in three Counties; Nairobi, Uasin-Gishu and Kisii in Kenya. This study focused mainly on the Technical Training Institutes (TTIs) that offer The Kenya National Examinations Council (KNEC) Technician Diplomas in Mechanical Engineering.

Sampling Design

The instructors in the mechanical engineering department were interviewed using questionnaires from the selected TTIs. The target population for this study constituted of 674 Mechanical Engineering Technology students and 80 Mechanical Engineering Technology teachers / instructors. According to the Ministry of Education Science and Technology in Kenya (2015), there were 31 TTIs, 10 Institutes of Technology (ITs) and 5 National Polytechnics. Besides the institutions affiliated to MOEST, there are other government institutions that offer the same curriculum and they are; The National Youth Service Engineering Institute and Railway Training Institutes. Only five of the institutions above were selected. Convenience sampling technique was used to sample 5 TTIs. This was deemed appropriate in this research because of time limitation and a strict focus on research questions within a relatively short time as explained by Kothari (2004). The instructors in the mechanical engineering department were interviewed and data recorded in questionnaires from the selected TTIs. Their enrolment was tabulated in table 1.

Table 2: Target Population

Name of TTI	No. of Students (N_S)	No. of Teachers (N_t)
NYS Engineering (Thika Road)	160	15
Railways Training Institute	80	16
Kisii National Polytechnic	154	13
Nairobi Technical Training Institute	200	16
Rift Valley Technical Training Institute	80	20
Total	674	80

Source: Administrations of respective TTIs (2016)

This study used tables developed by Mitchel & Jolley (1988) to determine the sample size. According to this formula a population of 674 students is adequately represented by 256 respondents while 80 teachers are represented accurately by a sample of 61 respondents. These samples were then proportionately distributed in the sampled TTIs according to their populations.

Table 2: Sample distribution

Name of TTI	Target population	Number sampled	Target population	Number sampled
NYS Engineering (Thika Road)	15	11	160	59
Railways Training Institute	16	12	80	29
Kisii Polytechnic	14	10	154	64
Nairobi Technical Training Institute	16	12	200	55
Rift Valley Technical Training Institute	20	16	80	29
Total	80	61	674	236

Data was collected using two standard rating scales, the learning method preference questionnaire for students and the teaching method preference questionnaire for teachers. The responses were scored for each teaching method on a five point Likert scale. The scores obtained were weighted averages. The statements were formulated in positive form with some questions being open-ended so as to get the opinion of the instructors' responses.

The reliability of the instructor's questionnaire (Pearson Product Moment Correlation (r) was 0.71 while that of the students' questionnaire was 0.72. The test implied that items in the instruments correlated strongly and therefore the questionnaires were reliable.

RESULTS AND DISCUSSIONS

The study aimed to identify teaching methods used more frequently by mechanical engineering teachers / instructors to deliver knowledge. The respondents rated frequency based on an eighteen (18) perception scale. This was a weighted scale having: "1" for 'hardly ever', "2" for 'hardly', "3" for 'sometimes', "4" for 'often' and "5" for 'very often.' The development, validity and reliability of the perception scale is explained in Chapter 3. The weights of various items from these questions were calculated using the Likert Scale (LS) formula (Equation 1).

$$W = \sum_{1}^{5} \frac{(B_2 \times 1) + (C_2 \times 2) + (D_2 \times 3) + (E_2 \times 4) + (F_2 \times 5)}{N} \quad (1)$$

Where W is weighted mean, B_2 , C_2 , D_2 , E_2 and F_2 have a weights of 1, 2, 3, 4 and 5 respectively, and N is the number of respondents. This research found that lecture or didactic method ranked first as it is preferred by most teachers in the sampled TTIs. This concurs with the findings of Felder & Prince, (2006). Other methods in the average category were in the order; whiteboard illustrations, individual written assignments, library research, question and answer method, homework / private study and class demonstrations. Those used minimally were CATs, Industrial visits, practical in workshops, students discussing their own knowledge, ideas or questions, dictation of notes, experiments, lecturing using overhead or PowerPoint presentation, project-based teaching, group written assignments. The method of teaching that was hardly used was E-learning, web-based animations, texts, software. According to the findings of Woods, Felder, Rugarcia, & Stice (2010), the use of teaching methods such as lectures, assignments and tests for technical training have serious implications on the students. These methods were said to be ineffective because they don't help the students to develop critical processing skills. Instead of these methods they further advised for more active methods of instruction that instructors / teachers could use in order to develop problem-solving, communication, teamwork, self-assessment, and other process skills. Furthermore Carpenter (2006) and (Huet, Mourtos, Costa, Pacheco, & Tavares, (2007) proposed more active involvement of students in the learning process.

Instructors' rating for preferred teaching methods in Mechanical Engineering Technology

The first research objective sought to find out the instructors preferred teaching methods in mechanical engineering technology in TTIs. The study sought the instructors opinions on teaching methods used more frequently in mechanical engineering content delivery. The respondents rated frequency based on an eighteen items on a weighted scale having: "1" for 'hardly ever', "2" for 'hardly', "3" for 'sometimes', "4" for 'often' and "5" for 'very often.' Table 3, shows that all the teachers sampled (N=61) most often used lecture or didactic method with an LS score of "4.56" (ca. "5").

Table 3: Teachers' response on the rate of application of teaching methods

Teaching method	N	W	W/N	Remarks
Lecture or didactics	61	278	4.56	Very often
White/blackboard illustrations	60	251	4.18	Often
Individual written assignments	60	237	3.95	Often
Library research	61	235	3.85	Often
Question & Answer	61	224	3.67	Often
Homework / Private study	61	217	3.56	Often
Class Demonstrations	60	211	3.52	Often
Continuous Assessment Tests	61	200	3.28	Sometimes
Industrial Visits	61	198	3.25	Sometimes
Practical Sessions in workshops	61	196	3.21	Sometimes
Students discuss their knowledge and ideas	61	187	3.07	Sometimes
Dictation of notes	61	182	2.98	Sometimes
Experiments	61	174	2.85	Sometimes
Lecturing using overhead or PPT	61	169	2.77	Sometimes
Project-based teaching & learning	60	169	2.82	Sometimes
Group written assignments	60	152	2.53	Sometimes
E-learning, web-based animations, texts, software	61	142	2.33	Hardly ever

Key: N, Number of respondents; W, Weighted sum, W/N, weighted average.

The study found that lecture or didactic method ranked first as the preferred method by most teachers in the sampled TTIs. This concurs with the findings of Felder and Prince (2006). Other methods in the average category were in the order; whiteboard illustrations, individual written assignments, library research, question and answer method, homework / private study and class demonstrations. Those used minimally were CATs, Industrial visits, practical in workshops, students discussing their own knowledge, ideas or questions, dictation of notes, experiments, lecturing using overhead or PowerPoint presentation, project-based teaching, group written assignments. The method of teaching that was hardly used was E-learning, web-based animations, texts, software. According to the findings of Woods *et al*, (2000), the use of teaching methods such as lectures, assignments and tests for technical training have serious implications on the students. These methods are said to be ineffective because they don't help the students to develop critical processing skills. Instead of these methods they further advised for more active methods of instruction that instructors could use in order to develop problem-solving, communication, teamwork, self-assessment, and other process skills. On the other hand Carpenter (2006) and Huet, Mourtos, Costa, & Pach (2007) proposed more active involvement of students in the learning process.

Other methods often used were whiteboard illustrations, individual written assignments, library research, question & answer, homework / private study, class demonstrations (LS "4"). Moreover, CATs, Industrial visits, practical in workshops, students discussing their own knowledge, ideas or questions, dictation of notes, experiments, lecturing using overhead or PowerPoint presentation, project-based teaching, group written assignments were sometimes used (LS "3"). The e-learning, web-based animations, texts, and software were hardly used methods with an LS score of "2.33" (ca. "2.0").

b) The second objective of the study investigated the students' perceptions of the teaching methods used by their instructors. A summary of the findings are presented in Table 4.

Table 4: Students' Perceptions of the teaching methods

Teaching method	N	W	W/N	Remarks
Lecture or didactics	201	892	4.44	Often
Dictation of notes	201	809	4.02	Often
Homework/private study	201	803	4.00	Often
Question & Answer	201	780	3.88	Often
White/blackboard illustrations	201	777	3.87	Often
Individual written assignments	191	752	3.94	Often
Experiments	201	744	3.70	Often
Class Demonstrations	201	691	3.44	Sometimes
Group written assignments	201	655	3.26	Sometimes
Library research	201	631	3.14	Sometimes
Students discuss their knowledge and ideas.	201	547	2.72	Sometimes
E-learning, web-based animations, texts, software	201	541	2.69	Sometimes
Project-based teaching & learning.	201	500	2.49	Hardly
Continuous Assessment Tests	201	436	2.17	Hardly
Industrial Visits	201	434	2.16	Hardly
Lecturing using an overhead or PowerPoint presentation	201	421	2.09	Hardly
Practical Sessions in workshops	200	411	2.06	Hardly

The students rated lecture, dictation of notes, homework / private study, question answer method, whiteboard / blackboard illustration, individual written assignments and experiments with LS "4" were methods often used by students (Table 4.3). Other methods, namely class demonstrations, group written assignments, library research, students discuss their knowledge, ideas, or questions, E-learning, web-based animations, texts, software, had a score of "3" which is an indication that the methods are used "sometimes". Project-based learning, CATs, industrial visits, lecturing using an overhead projector or PowerPoint presentation and practicals in workshops had a score of "2". Although the teachers ranked the lecture method as the method of teaching very often used, the students rated the lecture or didactic method as often used. Among the methods which fell in the same category were; dictation of notes, homework / private study, question and answer method, white / blackboard illustrations, individual written assignments and experiments. Class demonstrations, group written assignments, library research, students discuss their knowledge, ideas, or questions and E-learning, web-based animations, texts, software were rated as sometimes used. The methods of learning that according to mechanical engineering students ranked poorly were; project-based teaching & learning method, CATs, industrial visits, lecturing using an overhead or PowerPoint presentation and practical in workshops. From these findings, it concurs with Felder and Silverman (1988) several styles exist as interventions.

c) The third research objective assessed the teaching methods perceived by instructors as interesting, beneficial and motivating to the students. The preference of specific teaching methods in the department of mechanical engineering was established. Table 5 shows the rating of attitude of teachers towards the preferred choice of teaching using a five point Likert scale of five items. The instructors rating using a perception scale of 1 to 5 where, "5" for "definitely yes", 4 "for probably yes", 3 "for unsure", 2"for probably not" and "1" for "definitely not". For the sake of ranking the rating "unsure" was ignored while the two scales i.e. "definitely yes" and "probably yes" were considered more positive attributes for

this research question. The attitude of teachers towards the preferred choice of teaching was analyzed using a five point Likert scale of five items.

Table 1: Methods found by instructors to be interesting, beneficial and motivating

Teaching method	N	DY	PS	U	DY & PS
White / blackboard illustrations	60	26	31	3	95.0
Homework / private study	60	19	34	7	88.3
Industrial Visits	60	18	34	4	86.7
Individual written assignments	58	17	33	8	83.3
Lecture or didactic	60	30	20	10	83.3
Continuous Assessment Tests	60	27	23	10	83.3
Library research	60	20	28	8	80.0
Question & Answer	61	16	31	14	78.3
Lecturing using an overhead or PPT	60	15	31	10	76.7
Experiments	59	26	19	14	75.0
Project-based teaching & learning method.	60	18	23	18	68.3
E-learning, Web-based animations & software	55	14	23	10	61.7
Students discuss their knowledge & ideas.	60	11	8	11	31.7
Class Demonstrations	60	4	12	11	26.7
Dictation of notes	60	1	7	12	13.3
Group written assignments	60	4	3	15	11.7

Key: N, number of respondents; **DY**, definitely yes; **PY**, probably yes; **U**, unsure.

The results of the analysis, presented in Table 5 shows that whiteboard / blackboard illustrations was the most popular method of teaching mechanical engineering students in TTIs in Kenya. Other methods include homework, industrial visits, lecture method, CATs, library research, question & answer method, lecturing using overhead or PPT, experiments, project based learning, e-learning web based animations texts and software had scores above average whereas students discussing their own knowledge, class demonstrations, dictation of notes and group written assignments scored below average (< 50%).

d) The fourth research objective assessed the teaching methods perceived by students as interesting, beneficial and motivating. The mechanical engineering students rated their scores using a perception scale of 1 to 5 i.e., “5” for “definitely yes”, “4” “for probably yes ” , “3” for “ unsure ”, “2” for “ probably not” and “1” for “definitely not”. The sixteen methods of teaching were evaluated and the findings were tabulated in Table 4.6 presents teaching methods rated by the students, with seven of them scoring above average (with scores > 50%), i.e. whiteboard / blackboard illustrations, lecture method, discussions of concepts, repetition of exercises to pass examinations, library research and CATs. The rest of the methods of learning were rated below average (<50%) in terms of whether they are interesting, beneficial and motivating to mechanical engineering students at TTIs.

Table 2 Methods perceived by students as interesting, beneficial and motivating.

Learning Method	N	DY	PY	U	DY/PY
White/blackboard illustrations	196	115	63	14	91
Lecture or didactic method.	196	83	73	20	80
Discussion of concepts	194	80	52	45	68
Repetitive exercises to pass examinations	194	37	90	46	65
Library research	196	55	67	50	62
Continuous Assessment Tests	190	47	70	21	62
Project-based teaching & learning method.	197	66	24	70	46
Homework/private study	194	46	40	44	44
E-learning, web-based animations, texts, software	194	41	35	41	39
Individual written assignments	194	45	30	56	39
Use projects or activities that relate to real world application	191	27	40	49	35
PC fitted with LCD projectors	195	51	11	44	32
Group written assignments	195	21	36	67	29
Lecturing using an overhead or PPT	196	25	18	50	22
Experiments	193	2	23	31	13

Key: N, number of respondents; **DY**, definitely yes; **PY**, probably yes; **U**, unsure.

The students rated seven of the teaching methods above average (with scores >50%) i.e., whiteboard / blackboard illustrations, lecture method, discussions of concepts, repetition of exercises to pass examinations, library research and CATs. The rest of the methods of learning were rated below average (<50%) in terms of whether they are interesting, beneficial and motivating to mechanical engineering students at TTIs.

CONCLUSION

The study found out that instructors in the mechanical engineering departments in TTIs use lecture very often but most of the teaching is teacher directed (whiteboard / blackboard illustrations, question & answer method and class demonstrations) active methods that are used in mechanical engineering department are (library research, individual assignments and homework) The only method that ranked poorly in practical terms was the use of E-learning, web-based animations, texts and software. So much emphasis is placed on passing theoretical examinations. It also emerges from the literature cited and from the open-ended questions that, TTIs emphasize theory at the expense of hands-on skills. The students also confirmed that teaching is done by lecture method, dictation of notes, homework, question and answer methods blackboard illustrations, individual written assignments and experiments. Of notable importance is that such methods such as practical sessions, PowerPoint presentations, industrial visits and project-based learning methods were poorly rated in terms of frequency of use.

Research question two sought to establish which teaching method / s is considered by mechanical engineering teachers / instructors interesting, beneficial and motivating to mechanical engineering students at TTIs in Kenya. This study shows that whiteboard / blackboard illustrations, homework, industrial visits, individual assignments, lecture method, CATs were ranked above 50% and the rest of the methods namely ;library research, question & answer method, overhead / PowerPoint presentations, experiments, project-based e-learning class demonstrations, dictation of notes and group assignments were rated below 50%.

RECOMMENDATIONS

Based on the findings of this study, recommendations include the following,

- The government should aim at providing up-to-date instructional materials
- teachers should continuously engage in industry-based attachments
- Teachers /instructors of mechanical engineering should tailor their teaching methods towards participatory teaching approaches.
- Teachers should incorporate ICT, and provide printed notes instead of dictating notes while teaching mechanical engineering courses.
- The Kenya Institute of Curriculum Development (KICD) should allocate more time for practical sessions particularly on hands-on-skills training in the curriculum time allocation for workshop sessions. The KICD should also consider the practicability of the workload currently being taught, the teachers seem to argue that there is hardly enough time to do practical sessions effectively. They need equipped Laboratories / workshops and state of the art equipment.

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